

I claim:

1. A method enabling the precise creation, fitting, and reproduction of objects comprising the steps of:

- 5 1) Defining 2-dimensional profile representations of an object
- 2) Defining 3-dimensional parametric representations of an object
- 3) Converting the profile and parametric data into an electronic format suitable for
 input to computer aided design and manufacturing (CAD/CAM) programs
- 4) Creating a virtual CAD model from the profile and parametric data
- 10 5) Calculating Numerical Control (NC) motion commands from the CAD model
 using CAM technology
- 6) Processing an object using Computer Numerical Controlled (CNC) machine
- 7) Transmitting data throughout the process, enabling theses steps to be conducted
 at any combination of geographic locations.
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2. The method of claim 1, wherein step 1 comprises a tracing technique to define the 2-
 dimensional profiles.
3. The method of claim 1, wherein step 1 comprises a digitizing device to define the 2-
20 dimensional profiles.
4. The method of claim 1, wherein step 1 comprises an optical scanning process to
 define the 2-dimensional profiles.
- 25 5. The method of claim 1, wherein step 1 comprises exposure to a reactive chemical
 media, to define the 2-dimensional profiles.
6. The method of claim 1, wherein step 1 and step 2 comprise a digitizing device to
 define the 2-dimensional profiles and 3-dimensional parameters.
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7. The method of claim 1, wherein step 2 is facilitated by means of printed measuring
 utensils.

8. The method of claim 1, wherein step 1 and step 2 are facilitated by means of integrated instruction and data acquisition form.

5 9. The method of claim 1, wherein step 3 comprises optical scanning technology.

10. The method of claim 14 wherein step 6 comprises a CNC controlled machine with a rotating tool.

10 11. The method of claim 14 wherein step 6 comprises a CNC controlled machine with a cutting jet.

12. The method of claim 14 wherein step 6 comprises a CNC controlled machine with a cutting wire.

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13. The method of claim 14 wherein step 6 comprises a CNC controlled machine with a cutting laser.

14. The method of claim 14 wherein step 6 comprises a CNC controlled Rapid
20 Prototyping machine capable of directly producing a part.

15. The method of claim 1, wherein step 7 comprises data transmitted electronically.

16. The method of claim 1, wherein step 7 comprises data transmitted over the Internet.
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17. The method of claim 1 wherein any combination of steps 1-7 may be combined consolidated and/or automated.

18. An apparatus enabling the precise creation, fitting, and reproduction of objects
30 comprising:

1) a means of defining a 2-dimensional profile representation of an object's edges

- 2) a means of defining a 3-dimensional parametric representation of an object's topology
- 3) a means of converting the profile and parametric data into an electronic format suitable for input to computer aided design and manufacturing (CAD/CAM) programs
- 4) a means of creating a virtual CAD model from the profile and parametric data
- 5) a means of calculating Numerical Control (NC) motion commands from the CAD model using CAM technology
- 6) a means of processing an object using Computer Numerical Controlled (CNC) manufacturing technology
- 7) a means of transmitting data throughout the process enabling these steps to be conducted at any combination of geographic locations.
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19. A method enabling the precise creation, fitting, and reproduction of objects comprising the steps of:

- 1) Defining 3-dimensional parametric representations of an object
- 2) Converting the profile and parametric data into an electronic format suitable for input to computer aided design and manufacturing (CAD/CAM) programs
- 3) Creating a virtual CAD model from the profile and parametric data
- 4) Calculating Numerical Control (NC) motion commands from the CAD model using CAM technology
- 5) Processing an object using Computer Numerical Controlled (CNC) machine
- 6) Transmitting data throughout the process, enabling these steps to be conducted at any combination of geographic locations.

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20. An apparatus enabling the precise creation, fitting, and reproduction of objects comprising:

- 1) a means of defining a 3-dimensional parametric representation of an object's topology
- 2) a means of converting the profile and parametric data into an electronic format suitable for input to computer aided design and manufacturing (CAD/CAM) programs

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- 3) a means of creating a virtual CAD model from the profile and parametric data
- 4) a means of calculating Numerical Control (NC) motion commands from the CAD model using CAM technology
- 5) a means of processing an object using Computer Numerical Controlled (CNC) manufacturing technology
- 6) a means of transmitting data throughout the process enabling these steps to be conducted at any combination of geographic locations.